

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
14 December 2000 (14.12.2000)

PCT

(10) International Publication Number
WO 00/75812 A1

- (51) International Patent Classification⁷: G06F 17/30 (74) Agents: DIPPert, William, H. et al.; Cowan, Liebowitz & Latman, P.C., 1133 Avenue of the Americas, New York, NY 10036-6799 (US).
- (21) International Application Number: PCT/US00/14665
- (22) International Filing Date: 26 May 2000 (26.05.2000) (81) Designated States (*national*): AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW.
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/137,302 3 June 1999 (03.06.1999) US
09/378,891 24 August 1999 (24.08.1999) US
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- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— With international search report.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PERSONALIZED METABROWSER

| | UMRL | SOURCE | 204 | | Integer Array | 206 | | N/Y location | Height/Width | 210 |
|-----|------|----------------|------------|---|---------------|-----------|--|--------------|--------------|-----|
| | | | 202 | | | 208 | | | | |
| #1 | | www.yahoo.com | 2,2,2,1,2, | 2 | | (140,300) | | | (30,40) | (b) |
| #2 | | www.excite.com | 2,2,1 | | | (11,20) | | | (20,500) | |
| ... | | ... | ... | | | ... | | | ... | |
| #n | | | | | | | | | | |

| | UMRL | SOURCE | 214 | | POST Data | 218 |
|-----|------|--------|--------|--|----------------|-----|
| | | | 216 | | | |
| #1 | | JeffK | hello/ | | Xxdd432er56yt7 | (c) |
| #2 | | LowG | thanks | | Jh557yyhh88kk9 | |
| ... | | | | | | |
| #i | | | | | | |

(57) Abstract: The inventive application dynamically configures content data segments selected from numerous Internet data resources (202), such as documents (218), based on user defined preferences. The resulting presentation template data file formates a "real time" customized display (212) that gathers and aggregates selected content data segments into a single viewing area. The inventive presentation template does not store the actual data of the stored segments. Contrarily, what is being saved are the addresses of the parent document (202) as well as the coordinates of the actual data segments within their parent document (202). This customized presentation template may be shared with other users via e-mail, storage medium, or proxy server. It may be displayed by a custom-built or any off-the shelf commercially available Internet browser (204) on any Internet connected device, e.g., PC, Set, Set Top Box, personal digital assistant, etc.

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PERSONALIZED METABROWSER

CROSS-REFERENCE TO RELATED APPLICATIONS

5

The following patent claims the benefit of a Provisional U.S. Patent Application Serial No. 60/137,302, entitled "Information for Personalized Browsing/Intelligent Agent Software, which was filed on June 3, 1999 and is incorporated
10 herein by reference.

BACKGROUND OF THE INVENTION

15

Field of the Invention

The present invention relates to the presentation of data retrieved from the Internet, and more specifically to building a presentation template for presenting various data segments of
20 multiple Internet documents dynamically on a display screen.

Description of the Background of the Invention

25

The onset of Internet technology has made it possible for users of computing devices connected to the Internet to access vast and ever-increasing sources of information. However, despite the wide availability and volume of such information, the means of bringing diverse elements of such information
30 together in real-time for the purpose of displaying them on a single presentation page or screen is still evolving.

Commercially available programs designed for retrieving

and displaying Internet documents are called browsers. Examples include Microsoft Internet Explorer™ and Netscape Navigator™. Browsers download and display Internet documents, which may be found in hyper-text markup language (HTML) or
5 embedded extensible markup language (XML) format, one document at a time. These documents may be retrieved from Internet-connected devices, called Internet sites, which are assigned discrete Uniform Resource Locator (URL) addresses.

10 Where a single browser is employed, two separate documents may be viewed by requesting, retrieving, and viewing a first document, followed by the request, retrieval, and viewing of the second document. However, the first retrieved document will be lost from view when the second is viewed, although BACK
15 and FORWARD browser navigation commands may allow fast re-presentation of a previously retrieved (and now lost to view) document. This problem can be somewhat alleviated by using more than one copy of a browser. Where multiple copies of a browser are employed, multiple separate documents may be viewed
20 by requesting each copy of the browser being used to retrieve and display a separate document. In the windowing environment of most current operating systems, e.g., WindowsNT™, multiple documents retrieved by individual browsers may be viewed simultaneously, side by side, or in whatever manner the user
25 chooses to arrange the viewable windows.

To facilitate solutions to problems of simultaneous retrieval of a plurality of Internet documents, intelligent agent software may also be used. Intelligent agent software,
30 shown in Figure 1, is used to perform a wide variety of activities on the Internet, including an assortment of computing tasks such as searching, evaluating, reconfiguring, and filtering of documents. Intelligent agent software may act

autonomously on behalf of users, and may sense the state of their computing environment, adapt to changes, and perform intended activities according to predefined and learned parameters.

5

When multi-tasking intelligent agent software is used to download Internet documents, it may automatically load a plurality of predetermined documents from a variety of Internet sites to the user's desktop at one time. This multi-tasking ability allows intelligent agent software to create a "personal portal" on the user's device, which may facilitate finding, qualifying, comparing, and procuring products and services online.

15

The one issue that intelligent agent software does not address or resolve, is the arrangement and presentation of the aggregated content to the user on a single display page. Products currently available to search and display multiple Internet documents include applications such as CatchTheWeb, a description of which may be found at <http://www.catchtheweb.com/>. CatchTheWeb's site describes the application as follows:

25

"... an integrated development environment for managing your page archive. You can view the pages, re-organize their order, remove them, change their titles, and revise your notes about them."

Although programs such as CatchTheWeb may solve the problem of collecting related information, the end product of CatchTheWeb is a list of Internet documents (pages) which can only be viewed one document at a time. The comprehensive presentation of data of interest filtered and collected from more than one page and displayed on a single page display is not addressed by this product.

Presently, a need exists to customize the display of retrieved Internet documents. Customized displays may include a whole document, a part of the document, or just one data segment presented in a document. A single data segment may be static or it may be dynamically modified on a regular or irregular basis by its host Internet site. For example, a vacation resort may have an HTML/XML document that describes the resort, its room availability and its prices. Another related HTML/XML document may describe local amenities, i.e., restaurants, hotels, theaters, and recreation facilities near the hotel. A different Internet document may include daily weather reports for each city in the state where the target vacation resort is located, including water and air temperatures updated hourly.

Using today's browsing technology, an Internet user is required to retrieve and view each of these documents separately: the resort document, then the entertainment document, followed by the weather document, although not necessarily in that order. And, as noted above, viewing one document may preclude viewing another at the same time. Additionally, users interested only in the resort's weather would be required to retrieve and display the entire HTML/XML document containing that information, an inconvenient process when only one element of the page on which such information appears is desired.

Therefore, what is needed is a mechanism to retrieve multiple HTML/XML documents located in a variety of separate URL locations, select the information from them in which the user is interested, and display that information all at once on a pre-formatted presentation document, according to

instructions found in a presentation template, and all on a single page. Furthermore, the size (in bits) of the presentation template must be minimal so that the aggregated content may be displayed on Internet connected devices of
5 various capacities.

SUMMARY OF THE INVENTION

The present invention allows a user of an Internet connected device to build presentation templates for the
10 display of data segments from multiple documents. These documents may be retrieved by browsers or intelligent agent software.

All requested documents are gathered and parsed into nodes
15 containing data segments. These documents are then displayed showing selectable data segments separated by lines. The user peruses and selects wanted data segments. A display re-presentation is then built by arranging selected data segments in appropriate windows of the display re-presentation.

20

Display re-presentations may also be constructed from a prefabricated set of display re-presentations and multi-media presentation metaphors. To complete the formation, the following data for all selected data segments may be stored in
25 the presentation template:

1. the address of the document, e.g., the URL;
2. the location of each data segment within its parent document, as described by counting "begin" and "end" tags from the start of the document;
- 30 3. the size of the display re-presentation and the arrangement location of each data segment within the display re-presentation; and
4. attribute information for each data segment.

After completion, the presentation template may comprise instructions for making Internet requests for target Internet documents, intelligently selecting data segments from these
5 Internet documents, and presenting these data segments in an organized fashion to a viewer.

Upon being employed by a presentation segment of the inventive software, at a user's request or on a scheduled
10 basis, the presentation template may provide instructions to retrieve specific documents, translate exact content locations of these documents, and display these contents in specified formats. The user pre-configured presentation template allows for real-time retrieval and selection of multiple data segments
15 from multiple Internet sites and other sources, locally or via the Internet. The presentation template may be used for execution by the inventive application or may be executed by any off-the-shelf browser.

20

BRIEF DESCRIPTION OF DRAWINGS

The foregoing objects and advantages of the present invention may be more readily understood by one skilled in the
25 art with reference being had to the following detailed description of a preferred embodiment thereof, taken in conjunction with the accompanying drawings wherein like elements are designated by identical reference numerals throughout the several views, and in which:

30

Figure 1a is a pictorial representation of the environment in which the inventive software creates a "personal portal" for accessing a plurality of documents.

Figure 1b is a diagram of a computer system used for implementing the present invention.

5 Figure 2 is a sample retrieved document.

Figure 3 represents the data of the document shown in Figure 2.

10 Figure 4 is a flowchart of an inventive process for retrieving and parsing documents and for building a presentation template.

Figure 5 is a flowchart of an inventive process for
15 parsing individual retrieved documents.

Figure 6a shows the document data of Figure 3 after it has been parsed by the parsing process of Figure 4.

20 Figure 6b is an illustration of an object tree constructed in accordance with the document 20 as shown in Figure 2.

Figures 7a-d are samples of retrieved document of Figure 2, displaying separated, selectable data segments.

25

Figure 8a is an user interface view combining component programs of the invention and a document display.

Figure 8b is an user interface view for building the
30 presentation template.

Figure 9a is a flowchart of an inventive process for building the inventive presentation template.

Figures 9b and c represent a data file or a blueprint for storing pointers to data segments.

5 Figure 10a is a diagram of a computer system used for displaying the presentation template of the present invention.

Figure 10b is a flowchart of an inventive process for displaying the inventive presentation template.

10

Figure 11 is a flowchart of an inventive process for translating and displaying retrieved selected Internet documents according to the inventive presentation template.

15 Figure 12 is a flowchart of an inventive error checking process.

Figure 13 is a display of rearranged data segments from the document of Figure 8a.

20

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

Referring now to the drawings and in particular to Figure 25 1a, there is shown a network system 10, which comprises a computer system 12 upon which the software of this invention is executed, a plurality of Internet-connected devices or websites 14a-g, a plurality of databases 16a and b, and a network 11 for interconnecting the computer system 12 to each of the websites 30 14 and the databases 16. In one illustrative embodiment, the present invention may be implemented over a network 11, such as the Internet or intranet. Alternatively, a network may not be necessary, where the data may be retrieved from a storage device.

Where the network 11 takes the form of the Internet, the computer system 12 may be engineered to work with existing products built using interactive Internet (web) development tools such as a common gateway interface (CGI) 18 using Perl scripts, and an active server agent 18, which works with documents written in Java and Java/Visual languages. Through the use of these tools, the present invention may simultaneously access and retrieve data from the plurality of Internet or web sites 14a-g, as well as the Internet connected databases 16a and b.

Referring now to Figure 1b, the details of the computer system 12 are shown. In one illustrative embodiment of this invention, the computer system 12 comprises a bus 1, which is connected directly to each of a central processing unit (CPU) 2, a memory 3, a video interface 4, an input/output (I/O) interface 6, and a communications interface 8. The common bus 1 is connected by the I/O interface 6 to a storage device 7, which may illustratively take the form of memory gates, disks, diskettes, compact disks (CD), digital video disks (DVD), etc. The video interface 4 couples a display 5 to the common bus 1. The communications interface 8, e.g., a modem, is coupled to an internet connection 9, e.g., an Internet Service Provider (ISP), which in turn is connected to the network 11, whereby a data path is provided between the network 11 and the computer system 12 and, in particular, its common bus 1.

The computer system 12, as shown in Figures 1 a and b, operates in the context of this invention to transmit requests via the network 11 to selected websites 14 to access and download therefrom data, which represent a document 20 as illustrated in Figure 2. The document 20 is transferred to the

described with respect to illustrative and preferred
embodiments thereof, it will be understood by those skilled in
the art that the foregoing and other changes in form and
details may be made therein without departing from the spirit
5 and scope of the invention that should be limited only by the
scope of the appended claims.

b) employing said ID and said pointer to access and retrieve from that data source corresponding to said ID and that data segment identified by said coordinate; and

c) displaying at least one current data content element of
5 said retrieved data segment.

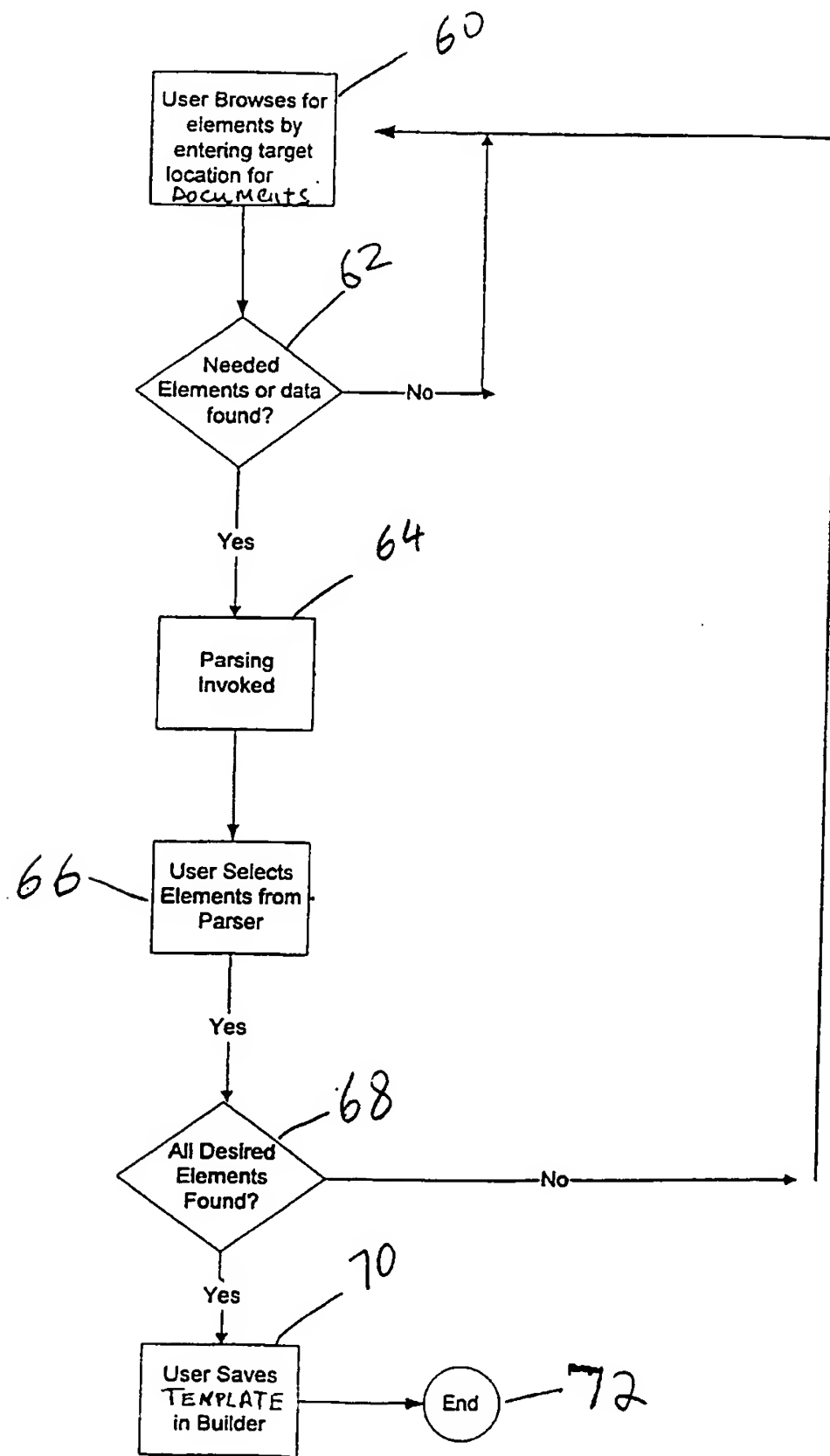


Figure 4

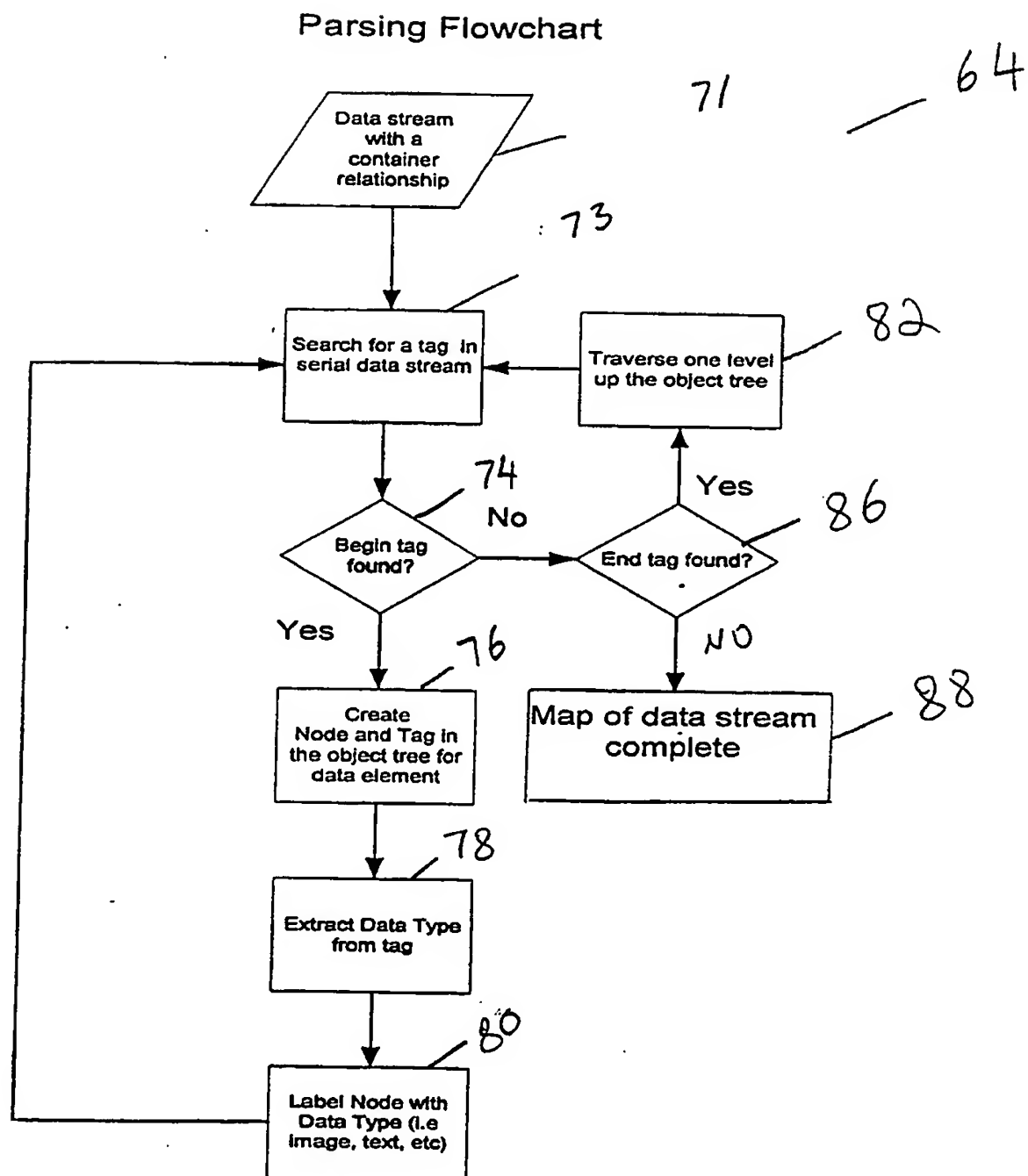


Figure 5

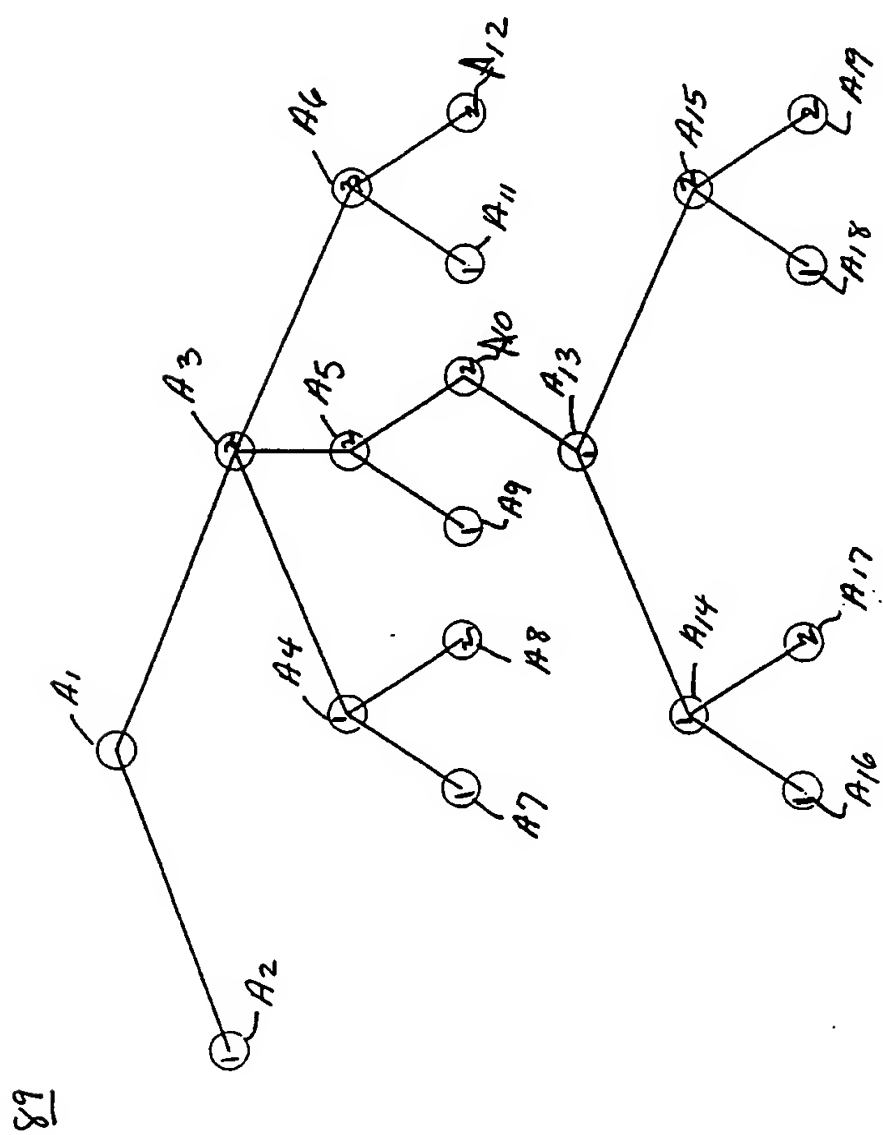


FIG. 6B

